



**ENGINEERING OPERATIONS COMMITTEE
MEETING MINUTES
OCTOBER 3, 2003 – 8:00 A.M.
EXECUTIVE PLAZA CONFERENCE ROOM**

Present: L. E. Tibbits J. Friend J. Polasek
B. J. O'Brien C. Roberts J. D. Culp
R. Safford J. W. Reincke T. Fudaly
C. Bleech

Absent: M. VanPortFleet

Guests: K. Kennedy J. F. Staton J. Morena
B. Lower T. Hynes T. Frake
P. Corlett

OLD BUSINESS

1. Approval of the Minutes of the September 11, 2003, Meeting – L. E. Tibbits

The minutes of the September 11, 2003, meeting were approved.

2. Update on Attenuator Purchasing Program – B. Lower

This item was approved at the April 2003 meeting. An instructional memorandum was sent out for review and the regions sent back several excellent comments. The FHWA reviewed the program as well and requested a few changes. Accordingly, changes were made and final acceptance is now requested.

ACTION: The Attenuator Purchasing Program, as amended, is approved.

NEW BUSINESS

1. Revision to Expansion Joint Layout Details for Concrete Pavements – J. F. Staton

The standard plans for expansion joints were developed when we were constructing long slab pavements. Current short panel pavements provide additional contraction joints, which offsets the need for designed expansion. Expansion joints are twice the cost of contraction joints and are a source of reduced ride quality and pavement performance. A query of other Midwest states indicated that expansion joints are seldom used in shorter panel pavements.

The Pavement Committee recommends the elimination of expansion joints on urban and rural mainline concrete pavement applications for freeways with continued use at bridge approaches and on ramps at the end of the paved gore.

ACTION: The recommendation is approved and the standard plan will be revised accordingly.

2. Pavement Selection, I-96/I-75 Reconstruction, CS 82194/82124, JN 60077 – K. Kennedy

The reconstruction alternatives considered were a hot mix asphalt (HMA) pavement (Alternate 1 – Equivalent Uniform Annual Cost [EUAC] \$121,823/directional mile) and a jointed plain concrete pavement using a P1 Modified Concrete Mix (Alternate 2 – EUAC \$107,367/directional mile).

A life cycle cost analysis was performed and Alternate 2 was approved based on having the lowest EUAC. The pavement design and cost analysis are as follows:

Alternate 2A (52.2 Percent of the Project) Reconstruct: Jointed Plain Concrete Pavement (I-75)

12.5"	Jointed Plain Concrete Pavement (16' joint spacing)
		(Mainline and Outside Shoulder)
9.5"	Jointed Plain Concrete Pavement (16' joint spacing) (Inside Shoulder)
16"	Open Graded Drainage Course (19" Inside Shoulder)
		Geotextile Separator
6"	Open Graded Underdrains
28.5"	Total Thickness

Alternate 2B (47.8 Percent of the Project) Reconstruct: Jointed Plain Concrete Pavement (I-96)

10"	Jointed Plain Concrete Pavement (15' joint spacing)
9"	Jointed Plain Concrete Pavement (15' joint spacing) (Inside Shoulder)
16"	Open Graded Drainage Course (17" Inside Shoulder)
		Geotextile Separator
6"	Open Graded Underdrains
26"	Total Thickness

Present Value Initial Construction Costs	\$1,027,754/directional mile
Present Value Initial User Costs	\$622,965/directional mile
Present Value Maintenance Costs	\$84,151/directional mile
Equivalent Uniform Annual Cost	\$107,367/directional mile

3. **Approval of Light Emitting Diode Technology in Traffic and Pedestrian Signals on State Trunkline Installations, and Approval of the Special Provisions and Detail Drawings of LED Signals – P. Corlett**

New technology is available for use in signals to reduce power consumption and annual costs by replacing incandescent bulbs with Light Emitting Diodes (LEDs). This technology has been successfully implemented in several other states. LED bulbs last five to ten years; presently we change bulbs annually. The initial costs are substantial, but will be offset by a reduction in usage costs, including the elimination of annual maintenance (bulb replacement).

The red and green LEDs are already approved by the Institute of Transportation Engineers and a new yellow LED is expected to be approved by next spring in time for the next round of signal modernization contracts.

ACTION: EOC approves the proposed implementation of LED signal technology, as well as the special provisions and detail drawings for LED signals.

4. **Changes to Standard Plan R-63 Series, Guardrail Approach Terminal – B. Lower**

Within the statewide guardrail population, there are only three to five of the older cable anchored terminal (Brakemaster) Type 3 endings. This system is difficult to repair and replace after being struck. There is a new Type 3 ending (Fleat-MT) now on the market that is less expensive and is easier to install and maintain.

The Type 3 standard plan has been updated to reflect a few changes to the older CAT system and to include the new Fleat-MT system.

The Barrier Advisory Committee recommends approval of this change.

ACTION: EOC approves the change and revisions to the Standard Plan R-63 Series.

5. **Median Object Protection-Bullnose Replacement – B. Lower**

In medians less than 70 feet, objects such as bridge piers and sign support structures are currently protected using a Bullnose. We are required to use NCHRP 350 compliant endings where possible. The Bullnose does not meet the 350 test requirements and is non-compliant. There have been no serious problems with this system to date.

A cross-functional team has developed a compliant replacement system for the Bullnose using standard Type 3 endings. It redirects a vehicle very well and is easier to repair.

The Barrier Advisory Committee recommends adoption of the new Median Object Protection standard.

NOTE: New construction must replace Bullnoses with the new design. Maintenance will continue to repair or replace Bullnoses in-kind.

ACTION: The recommendation is approved and will be an optional inclusion for new designs in the 2004 lettings, but for all 2005 lettings it will be mandated for implementation.

6. **Legislative Requirements for “High Quality Pavement Marking Materials” – J. Morena**

We have been legislatively mandated to provide “high quality pavement marking materials” on future new pavement construction projects. Concrete and asphalt paving projects with a design life exceeding ten years are included.

In order to attain the “high quality” standard, we must define a system of pavement markings that will provide three to five years of service. Then we must identify projects where the application and use of durable marking systems would be appropriate based on future maintenance activities.

The following recommendation is proposed -

On newly constructed or reconstructed concrete or full-depth asphalt pavements, the following high quality marking systems will provide a three to five year marking life:

Option 1 - 4” Polyurea skip lines, recessed.
6” Waterborne or spray thermo edge line on the rumble strip. Rumble strip may be placed at the pavement edge or with a 4” offset. (This option should not be used in urban/residential areas where noise may be an issue.)

Option 2 - 4” Polyurea skip lines, recessed.
6” Polyurea edge lines, recessed. (This option is to be used when the rumble strip is placed beyond the 4” offset from the pavement edge.)

These options have been reviewed and approved by industry.

ACTION: The recommendation is approved as modified. The rumble strip detail will be reviewed and revised. An instructional memorandum will be prepared for guidance in the regions when setting up projects. There will be a monitoring and evaluation phase of these projects.

Roger Safford will assist by providing Jill Morena with a list of affected or candidate 2004 projects from the regions’ systems managers.

7. Ride Quality Index – R. Safford and T. Hynes

We have measured the ride quality of pavements for many years using the Ride Quality Index (RQI), while other states and countries have been using the International Roughness Index (IRI). There is a close correlation between the two indices.

It is recommended that EOC approve IRI as the department's standard for measuring ride quality on construction projects. IRI will be implemented as other changes are made to the ride quality specification and will be in place for the 2005 construction season.

Industry has reviewed this change and had no objections to it.

ACTION: The recommendation to use IRI in lieu of RQI is approved.

(Signed Copy on File at C&T)

Jon W. Reincke, Secretary
Engineering Operations Committee

JWR:kar

cc:	G. J. Jeff	S. Mortel	K. Peters
	K. Steudle	D. Jackson	J. Ingle
	L. Hank	W. Tansil	J. Steele (FHWA)
	EOC Members	D. Wresinski	A. C. Milo (MRBA)
	Region Engineers	R. D. Till	R. J. Risser, Jr. (MCPA)
	TSC Managers	D. A. Juntunen	D. Hollingsworth (MCA)
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	T. Kratofil	C. Libiran	M. Newman (MAA)
	M. DeLong	R. J. Lippert, Jr.	M. Nystrom (AUC)
	B. Kohrman	T. L. Nelson	J. Murner (MRPA)
	J. Shinn	T. Phillips	R. Brenke (ACEC)